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Issued by the EPA Chief Information Officer, Pursuant to Delegation 1-19, dated 07/07/2005

EARNED VALUE MANAGEMENT (EVM) PROCEDURES

1. PURPOSE

EPA's EVM Procedures describe the Agency methods for collecting and reporting performance information on major IT investments (See Section 9, Definitions, for a description of major IT investment). The EVM Procedures explain how EPA Program Offices are to receive, organize, analyze, and report cost, schedule, and performance of their major IT investments. Additional Agency policies, procedures, methodologies, training, and project management best practices are used in conjunction with these Procedures for the effective planning and management of IT investments.

EVM is required for those parts of a major investment in the development/modernization/enhancement (DME) phase. EVM is required for both government and contractor efforts.

2. SCOPE AND APPLICABILITY

Major IT investments in the Preliminary Design phase (synonymous with the Office of Management and Budget's (OMB's) "Planning" phase) must have an established baseline with the appropriate Work Breakdown Structure (WBS) and use EVM when prototyping and testing to select the alternative. EPA major IT investments with any resources allocated to the Development phase (synonymous with OMB's "Acquisition" phase) are required to report EVM.

3. AUDIENCE

The primary audience for this document is the investment owners and managers of major IT investments who are responsible for managing their DME activities using EVM principles, and the Senior Information Officers (SIOs), Information Management Officers (IMOs), and associated staffs that collect, compile, review, and approve the EVM data on their respective major IT investments.

4. BACKGROUND

Earned Value Management (EVM) is a project management tool that effectively integrates the project scope of work with the schedule and cost elements for optimum project planning and control. It is used to monitor and control project resources and compile results into a single set of metrics that managers can compare. EVM helps managers evaluate and control project risk by measuring project performance and progress.

OMB requires agencies to institute performance measures and management processes that monitor and compare actual performance to planned results. Agencies must use a performance-based acquisition management system, based on the American National Standards Institute/Electronic Industries Association (ANSI/EIA) Standard 748, to obtain timely information regarding the progress of investments.

EPA Classification No.: CIO 2120.P-01.2	CIO Approval Date: 09/28/12
CIO Transmittal No.: 12-005	Review Date: 09/28/15

OMB expects agencies to achieve, on average, 90 percent of the cost and schedule goals. OMB expects agencies to conduct investment reviews if the 90 percent goals are not achieved.

On June 28, 2010, OMB issued Memorandum 10-27 which provides policy direction regarding the development of agency IT investment baseline management policies. This memorandum outlined the requirements for agency policy to address:

- 1. Establishing an investment baseline
- 2. Rebaselining an investment
- 3. Notifying OMB of new and changed baselines
- 4. Managing and monitoring baselines via the use of performance management systems
- 5. Federal IT Dashboard reporting requirements

To comply with OMB requirements, EPA established a high-level governance mechanism through its IT Policy Framework and EVM Procedures. Previously, in October 2004, EPA instituted the use of Microsoft Project for management of the Agency's major IT investments and customized a Microsoft Excel spreadsheet, explained later in this document, designed for investment project managers (PMs) to capture and report an investment's costs on a quarterly basis. As of March 2005, a Class Deviation was made to EPA Acquisition Regulation (EPAAR) 1552.211-79, which finalized, approved, and incorporated EPA's (i.e., the Office of Environmental Information's (OEI)) EVM Procedures outlined in this document into the contract clause.

These Procedures establish the practices that investment managers should use to comply with and implement EVM requirements. These Procedures are superseded by any appropriate Federal Acquisition Regulation (FAR) or OMB requirements.

5. AUTHORITY

5.1 Legislation

- Government Performance and Results Act of 1993 Mandates the use of performance metrics. http://thomas.loc.gov/cgi-bin/query/D?c103:1:./temp/~c103nnurO9
- Federal Acquisition Streamlining Act of 1994 Requires agency heads to achieve, on average, 90 percent of the cost and schedule goals established for major and non-major acquisition programs of the agency without reducing the performance or capabilities of the items being acquired. http://thomas.loc.gov/cgi-bin/query/z?c103:S1587.ENR
- Clinger-Cohen Act of 1996 Requires establishment of the processes for executive agencies to analyze, track, and evaluate the risks and results of major investments in IT and requires reporting on the net program performance benefits achieved by agencies. http://www.cio.gov/Documents/it_management_reform_act_feb_1996.html

5.2 Policies

 OMB Guidance on Exhibit 300—Planning, Budgeting, Acquisition, and Management of Information Technology Capital Assets – Outlines a systematic process for program management, which includes integration of program scope, schedule, and cost objectives;

EPA Classification No.: CIO 2120.P-01.2	CIO Approval Date: 09/28/12
CIO Transmittal No.: 12-005	Review Date: 09/28/15

requires use of EV techniques for performance measurement during execution of the program; and specifically identifies ANSI/EIA Standard 748.

http://www.whitehouse.gov/sites/default/files/omb/assets/egov_docs/fy13_guidance_for_exhibit_3 00 a-b 20110715.pdf

- OMB Circular A-127 (Financial Management Systems) prescribes policies and standards from executive department s and agencies to follow when managing their financial management systems.
 - http://www.whitehouse.gov/sites/default/files/omb/assets/agencyinformation_circulars_pdf/a127_attachment.pdf
- OMB Memorandum M-10-27, "Information Technology Investment Baseline Management Policy"

 Provides policy on the establishment of, management of, and changes to investment baselines.
 http://www.whitehouse.gov/sites/default/files/omb/assets/memoranda_2010/m10-27.pdf
- Federal Acquisition Regulation FAR EVMS requirements can be found in Parts <u>2.101</u>, <u>7.105</u>, 34, 34.2, and 52.234-2 through 4.

5.3 Standards

American National Standards Institute/Electronic Industries Association (ANSI/EIA) EVMS Standard 748-1998 – Industry process for use of EVMS including integration of program scope, schedule, and cost objectives; establishment of a baseline plan for accomplishment of program objectives; and use of EV techniques for performance measurement during the execution of a program.

http://www.ndia.org/Divisions/Divisions/Procurement/Documents/PMSCommittee/CommitteeDocuments/ComplementsANSI/NDIA PMSC Intent Guide May 2011.pdf

6. PROCEDURES

6.1 Organization, Planning, Scheduling, and Budgeting

This section describes the processes used to implement EVM.

6.1.1 Program Planning/Establishing a Performance Measurement Baseline

OMB, the FAR, and EPA procedures require that all major IT investments undergoing DME use an established EVMS. EVM implementation shall occur at the point where sufficient investment definition (e.g., establishment of the Performance Measurement Baseline (PMB)) is achieved and the DME cost is equal to 5% or more of the total annual (fiscal year) budget. This includes steady state investments that have a DME portion that equals or exceeds 5% of the total annual (fiscal year) budget.

The elements of an EVMS, consistent with the ANSI/EIA Standard 748, include the following:

- Work Breakdown Structures (WBS) A task-oriented detailed breakdown, which defines the work
 packages and tasks at a level above that defined in the schedules.
- Organizational Breakdown Structures (OBS) A functionally-oriented division of the organization established to perform the work.

EPA Classification No.: CIO 2120.P-01.2	CIO Approval Date: 09/28/12
CIO Transmittal No.: 12-005	Review Date: 09/28/15

- Responsibility Assignment Matrix (RAM) Correlates the work required by a WBS element to the functional organization responsible for accomplishing the assigned tasks.
- Performance Measurement Baseline (PMB) A time-phased budget plan against which project performance is measured.

Effective management requires the integration of the schedule and cost elements of the investment. Schedules that result from this integration show the planned time required to accomplish the technical scope of the contract. The planned time is constrained by the available resources necessary to execute the work including scope, dependencies upon other work packages, and factors which may arise later. The schedule will be adjusted by leveling the resources to conform to the available budget, resource constraints and capacity of the work site among other factors.

The schedule should cover all specified work and incorporate milestones that are meaningful in terms of the technical requirements of the contract. The schedule must also be derived from the plan and contain forecasts of expected future progress. Such schedules should identify key milestones and activities and incorporate the effects of resources constraints and interrelationships between work packages which will permit the investment to identify the critical path(s).

If appropriate, the schedule may contain a master schedule and related subordinate schedules that provide a logical sequence from the detail to the summary level related to and constrained by external milestones assigned by the appropriate authority. Intermediate schedules may be established if needed to provide a logical sequence from the detail level schedules to the master investment schedule. The schedule must also provide for the identification of interdependencies between organizations and WBS elements at the level appropriate for efficient investment management. An effective scheduling system will depict the plan to accomplish the technical scope and the actual technical progress.

The schedule provides information on progress against the plan, along with estimates of the time required to complete the remaining technical scope. The schedule baseline, progress, and estimated time to complete, should be integrated with the financial view (budgets, EV, and estimated cost to complete) of the technical scope. Scheduling should interface with other elements of the EVMS to the extent necessary for measurement and evaluation of project status. The schedule system should provide current status and forecasts of completion dates for all authorized work. The summary and detailed schedules should enable a comparison of planned and actual status of project accomplishment based on milestones or other indicators used for control purposes. The ability to obtain financial data coincident with the schedule data from a specific period directly affects the currency of the information and the quality and timeliness of analysis and assessments. When the financial data excessively lags schedule information, accurate performance measurement information will not be available quickly enough to take effective action to mitigate variances. When this situation is present, managers should implement a process to estimate actual costs as a means to increase the currency of the performance information.

The assignment of budgets to scheduled segments of work produces the Performance Measurement Baseline, against which actual performance can be compared. The establishment, maintenance, and use of the PMB are indispensable to effective performance measurement. The PMB should be in place as early as possible in a project and should be planned to project completion. In complex projects, the PMB will consist of work packages containing resources, planning packages containing budget and some summary level planning packages that also contain budget. Planning packages should be an item of continuing management interest. When the greater part of the budget is in planning packages or summary level planning packages because the project completion is so far in the future, the maturity of the PMB is questionable. Projects that have a long lifecycle must be broken down into useful segments for which individual PMBs can be established and controlled. Projects become more likely to be executed within cost and schedule when they are divided into the executable segments.

EPA Classification No.: CIO 2120.P-01.2	CIO Approval Date: 09/28/12
CIO Transmittal No.: 12-005	Review Date: 09/28/15

The PMB must be well-documented, comprehensive, complete, and credible and consistent with industry and government best practices. At a minimum, the PMB should cover a useful system component or capability and the duration of the baseline should be manageable so that it does not lose relevancy. OEI recommends durations that are one year or less. Additionally, the baseline should include a description of the business need and relevant performance measures, to include baseline performance and target performance.

The PMB can only contain budget that is identified to a work package, planning package, or undistributed budget. Work packages and planning packages only contain work that directly affects the product or outcome. Work packages and planning packages cannot contain budget or resources that are not required to execute a specific WBS element. Project costs not included in the total cost that are not associated with specific work accomplishment, such as profit, fee, payment-in-lieu of taxes, management reserve, contingency and other similar items, do not belong in the PMB. The PMB must be valid for the progress and performance measures to be valid. Management reserve and contingency cannot be in the PMB because there is no defined work associated with them. When a work package or planning package requires additional resources, the additional budget may be assigned from management reserve or contingency. In that event, that assigned portion of the budget would no longer be management reserve or contingency.

6.1.2 Integrated Baseline Reviews

Investment managers and their technical staffs will evaluate contract performance risks inherent in the contractor's planning baseline. This evaluation will be initiated no later than six months after contract award or an interagency agreement is reached, or when a major modification occurs, for all actions requiring EVM. The Integrated Baseline Reviews (IBRs) must occur before DME starts and before any rebaseline request. Investment managers will use the IBRs throughout the investment when EVM is required.

The contractor and the government will ensure that this review has a business focus and includes important technical considerations. The process is usually composed of four steps:

- (1) The Investment Manager's understanding of the risks;
- (2) Preparation for an IBR;
- (3) Execution of the IBR; and
- (4) The management process (the source of on-going mutual understanding).

The key step in the process is execution of the IBR. The IBR establishes a mutual understanding between contractors and government of the project PMB. This understanding provides for an agreement on a plan of action to evaluate the risks inherent in the baseline during project execution. Completion of the review should result in the assessment of risk within the project baseline and the degree to which the following have been established:

- (1) Technical scope of work is fully included and is consistent with authorizing documents;
- (2) Key project schedule milestones are identified and supporting schedules reflect a logical flow to accomplish the work;
- (3) Resources (budgets, facilities, personnel, skills, etc.) are available and are adequate for the assigned tasks;
- (4) Tasks are planned and can be measured objectively relative to the technical progress;
- (5) Rationales underlying the program are reasonable; and
- (6) Management processes support successful execution of the project.

EPA Classification No.: CIO 2120.P-01.2	CIO Approval Date: 09/28/12
CIO Transmittal No.: 12-005	Review Date: 09/28/15

Documents related to the IBR must be maintained by the SIO/IMO.

For additional information, refer to the Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics website which, in cooperation with industry, has an IBR handbook located at: http://www.ndia.org/Advocacy/Resources/Documents/Content/NavigationMenu/Advocacy/Resources/PDF s30/program_managers_guide.pdf .

IBRs are conducted by the project team for the investment. Project team staff may be supplemented with subject matter experts, as necessary, at the discretion of the project manager and/or SIO/IMO. Any qualified person who did not prepare the baseline can join the project team during the IBR process. The SIO makes final decisions as to who is qualified. If there are federal-only sections of the baseline, then staff other than those who prepared the Federal portion of the baseline must review it.

The selection and rationale for who is involved in the IBR should be documented as part of the IBR preparation phase.

If a contractor prepares a baseline for the contractor portion of the project, then an example methodology for conducting an IBR would be to have the Integrated Project Team (IPT) serve as the reviewing group for the IBR (with the contractor present to provide explanation and rationale for why the baseline was prepared as it was). If necessary, the IPT could be supplemented by federal or contractor members who were present because of their expertise or because of a particular issue with the baseline that requires additional review. For a federally-prepared baseline (e.g., that reflects the federal portion of an investment), the IPT can conduct the IBR as long as the IPT has members who were not responsible for preparing the baseline.

The SIO is responsible for: 1) ensuring the Investment Manager and project team plan an IBR in accordance with the DoD guidance and the EPA procedures, and approve the overall methodology that will be used for the IBR process; 2) ensuring the Investment Manager and project team execute the IBR and report any major findings to the SIO with a mitigation strategy; and 3) approving the results of the IBR with any mitigation actions and ensure the subsequent baseline is adjusted according to the IBR findings.

6.2 Monitoring, Analysis, and Reporting

6.2.1 EVM Data Collection Requirement

The FAR and EPAAR require contractors to provide investment project managers (PMs) with their monthly EVM data documenting the cost, schedule, and performance of the investments. It is the responsibility of the PMs to review the monthly reports and make adjustments to the investment's cost and schedule accordingly. The PMs will also provide their management (IMO and/or SIO) with the results of their monthly review.

All investments reporting EVM should have a formally approved WBS, OBS, and PMB against which work can be planned, tracked, and reported. These three elements, among others, are critical elements of the ANSI/EIA Standard 748 for EVMS. The complete requirements of ANSI/EIA Standard 748 are included as Appendix B, ANSI/EIA 748 – Summarized (32) Guidelines, of these Procedures.

EPA Classification No.: CIO 2120.P-01.2	CIO Approval Date: 09/28/12
CIO Transmittal No.: 12-005	Review Date: 09/28/15

At EPA, these critical elements should be approved by the investment's respective program offices.

The investment team must ensure that all direct costs of work (contractor and federal employees) are allocated to the investment. PMs should plan to use EPA's payroll system as the basis for these direct cost charges.

Period of Assessment

IMOs and/or SIOs will review EVM reports on a monthly basis. PMs will collect and analyze EVM data and share the information with their management so that they can take corrective action, as necessary.

Submitting the EVM Data Submission Template

PMs are required to submit EVM data to their respective IMO and/or SIO. The EVM data can be captured on the standard EVM template (see Section 6.4, Templates and Tools) or on an equivalent form.

6.2.2 EVM and the Federal IT Dashboard

As of January 2012, there is no requirement for the monthly EVM reports to be sent outside of the agency on a recurring basis. OMB does, however, require Major IT Investments to provide monthly updates to project and activity cost and schedule. These updates are collected in accordance with the instructions provided in the Monthly IT Dashboard Update Data Call which is distributed by the National CPIC Team at the beginning of each month.

6.2.3 Data Management and Control

All data generated during the EVM process will be maintained at the Program Office (e.g. OA, OW, OEI, etc.). Upon request, the Program Office must provide this information to OMB and/or to EPA IT governance boards within ten days.

6.3 Baseline Change Control Process

EPA has a baseline change control process that ensures efficient identification and evaluation of changes and tailored management review of proposed changes. Once changes are approved internally, the National CPIC Team will post the change(s) and justification(s) in eCPIC and then transmit this information to the Federal IT Dashboard.

A rebaseline change is a formal request to change an approved (Performance Measurement) baseline. All rebaseline change requests (with the exception of routine corrections) are reviewed and approved by the SIO, the IIS, and the CIO. Considerable effort should be made during the planning phase of the investment to account for all areas of the System Life Cycle (SLC) of the investment in order to avoid the need for continuous rebaselining.

Acceptable reasons for rebaselining include the following:

- Significant change in an investment's goals (scope, requirements, objectives) resulting from internal or external management decisions, or changes in funding level or the availability of funds.
- Current baseline is no longer useful as a management tool for realistic performance measurement as variances are so high that they lose meaning.

All rebaseline requests must clearly explain the reason(s) why the current plan (baseline) is no longer feasible.

EPA Classification No.: CIO 2120.P-01.2	CIO Approval Date: 09/28/12
CIO Transmittal No.: 12-005	Review Date: 09/28/15

After receiving approval from their SIO, the Investment Manager should prepare the following rebaseline documents:

- Precise justification
- Revised investment description
- Revised milestones with new cost and schedule goals
- Revised Summary of Funding table

This SIO/IMO will collect, review, and submit this information to the National CPIC Team for inclusion into the IIS meeting agenda to obtain concurrence and recommend the request to the CIO. The Investment Manager must monitor and report on currently approved milestones until the CIO approves the rebaseline.

Once the CIO approves the new baseline, the Investment Manager makes the appropriate adjustments to the EVM data. This generally involves re-setting the Budgeted Cost for Work Scheduled (BCWS) of the investment to better reflect the future activities. Additionally, the National CPIC Team, in close collaboration with the affected IMO and Investment Manager, will update the Federal IT Dashboard. The update to the IT Dashboard is considered notification to OMB.

Approval Authority	Lifecycle Cost Threshold	DME Schedule Threshold
Senior Information Officer	<5% change in life cycle cost	<10% change in DME schedule duration
Information Investment Subcommittee	≥5% change in life cycle cost	≥10% change in DME schedule duration

Table 6-1: Baseline Change Control Approval Level and Thresholds

Percent changes in lifecycle costs are the percent changes in the sum of planning, DME, and operations and maintenance (O&M) costs. The percent changes in DME schedule threshold are determined differently than lifecycle costs. For each DME duration (the time from the start of DME through its defined completion), a percent of change in the total weeks or months is used as the rebaselining threshold. For projects in constant DME, PMs must identify discrete DME phases (based on major deliverables) as the basis for calculating the schedule threshold. In all cases, an SIO may evaluate whether the reason for a rebaseline change was a Congressional action--a continuing resolution or change in legislation--and factor these elements into their determination of what category a change meets.

6.3.1 Developing a Corrective Action Plan

Developing a Corrective Action Plan is the responsibility of the Program Office. For major investments that have a cost or schedule variance of + or -10% or more, Program Offices are required to develop a Corrective Action Plan. It is at the discretion of the IIS and CIO as to whether or not Program Offices/investment owners/managers will need to draft a Corrective Action Plan for those investments within a variance of + or -10%. Both negative and positive variances need to be reviewed and addressed as positive variances could indicate gaps in planning or unforeseen changes in scope. If the variance is a result of contractor performance, the Investment Manager may obtain input from the contractor for the Corrective Action Plan.

EPA Classification No.: CIO 2120.P-01.2	CIO Approval Date: 09/28/12
CIO Transmittal No.: 12-005	Review Date: 09/28/15

Corrective Action Plans are documents that allow Program Offices to define the strategy that will be employed to improve the performance of their investment(s). The Corrective Action Plan requires Program Offices to provide a brief description of the strategies they will implement in order to correct existing problems; the specific, actionable tasks associated with each strategy; points of contact for each task; and start and end dates for executing each task. PMs may be required to provide the status of any Corrective Action Plans in future Quarterly Reviews. Corrective Action Plans are submitted in response to the quarterly EVM data call and a sample template may be found at: http://intranet.epa.gov/cpic/evm/out-variance-corractionplan.doc

Evaluating Corrective Action Plans

The SIO is responsible for evaluating the effectiveness of all Corrective Action Plans that are developed by their respective Program Offices. If the SIO is not comfortable with the documented corrective strategy, s/he may call for a meeting with the responsible Investment Manager and team in order to obtain a better understanding of the challenges facing the investment. Ultimately, the Corrective Action Plan will be presented to the IIS for review and approval.

6.3.2 Compliance Reviews

EPA must ensure that contractors comply with the FAR clauses requiring EVMS in compliance with the ANSI/EIA Standard 748. In order to streamline the compliance review process EPA requires a letter from each contractor certifying that the FAR clauses related to EVM are being implemented. These activities include following the ANSI/EIA Standard 748 elements and establishing a timeline for receiving ANSI/EIA Standard 748 certification. A sample template of the contractor EVM compliance certification letter is provided in Appendix E. Office of Acquisition Management (OAM) coordinated the collection of the initial contractor certification letters. For any new investments, the letter must be received at the same time the first quarterly EVM report is submitted.

6.3.3 Exemptions and Waivers

If the EPA investment supports a shared service and the shared service provider's contract does not require compliance with ANSI/EIA Standard 748, the Investment Manager may follow the exemption process. The Investment Manager may ask the SIO to send a memorandum to the National CPIC Team invoking the compliance review exemption. The memorandum must contain the names of the EPA investment, shared service provider, and contractor and should be submitted at the same time as the first quarterly EVM report.

A wavier to the ANSI/EIA Standard 748 compliance can be requested by small businesses as long as they can demonstrate that compensating controls are currently in place. This waiver request, in the form of a memorandum to the IIS from the SIO, must justify the waiver request and describe the compensating controls. The memorandum should be sent to the National CPIC Team for inclusion on the IIS quarterly meeting agenda.

6.3.4 Surveillance Reviews

As stated in the National Defense Industrial Association (NDIA) Program Management Systems Committee (PMSC) Surveillance Guide (an OMB-recommended document), Surveillance is the process of reviewing the health of the EVMS process applied to one or more programs. The purpose of surveillance is to focus on using EVMS effectively to manage cost, schedule, and technical performance.

EPA Classification No.: CIO 2120.P-01.2	CIO Approval Date: 09/28/12
CIO Transmittal No.: 12-005	Review Date: 09/28/15

OEI, in conjunction with OAM plans to execute an effective surveillance process to ensure that the key elements are maintained over time and on subsequent applications.

The goal of EVMS surveillance is twofold. First, it ensures that the contractor processes and procedures are being followed appropriately. Second, it confirms that those processes and procedures satisfy the guidelines in the ANSI/EIA Standard 748. An overview of the surveillance process includes:

- Organization
- Planning
- Execution
- Results
- Management control and corrective action

6.4 Integration of EVMS with Acquisition Processes

Current language in EPAAR 1552.211-79, Compliance with EPA Policies for Information Resources Management, states that contractors must comply with EPA IT policies. The FAR and the EPAAR 1552.211-79 b (5) require "Contractors performing IRM activities on behalf of the Agency shall conform to

EPA's Earned Value Management Systems requirements, shall be in compliance with the ANSI/EIA Standard 748-A, and shall conform to all EPA governing documents associated with EPA's IT infrastructure."

7. RELATED DOCUMENTS

- Government Performance and Results Act of 1993 Mandates the use of performance metrics.
- Federal Acquisition Streamlining Act of 1994 Requires agency heads to achieve, on average, 90 percent of the cost and schedule goals established for major and non-major acquisition programs of the agency without reducing the performance or capabilities of the items being acquired.
- Clinger-Cohen Act of 1996 Requires establishment of the processes for executive agencies to analyze, track, and evaluate the risks and results of major investments in IT and requires reporting on the net program performance benefits achieved by agencies.
- OMB Guidance on Exhibit 300—Planning, Budgeting, Acquisition, and Management of Information Technology Capital Assets Outlines a systematic process for program management, which includes integration of program scope, schedule, and cost objectives; requires use of EV techniques for performance measurement during execution of the program; and specifically identifies ANSI/EIA Standard 748.
- OMB Memorandum M-10-27, "Information Technology Investment Baseline Management Policy"

 Provides policy on the establishment, management, and change to investment baselines.
 http://www.whitehouse.gov/sites/default/files/omb/assets/memoranda_2010/m10-27.pdf

EPA Classification No.: CIO 2120.P-01.2	CIO Approval Date: 09/28/12
CIO Transmittal No.: 12-005	Review Date: 09/28/15

- EPAAR 1552.211-79 b (5) Compliance with EPA Policies for Information Resources Management
 - States that contractors must comply with EPA IT policies, and that contractors performing IRM activities on behalf of the Agency shall conform to EPA's EVMS requirements, shall be in compliance with the ANSI/EIA Standard 748-A, and shall conform to all EPA governing documents associated with EPA's IT infrastructure.
- Federal Acquisition Regulation FAR EVMS requirements can be found in Parts 2.101, 7.105, 34, 34.2 and 52.234-2 through 4. http://acquisition.gov/far/loadmainre.html.
- American National Standards Institute/Electronic Industries Association (ANSI/EIA) EVMS
 Standard 748-1998 Industry process for use of EVMS including integration of program scope,
 schedule, and cost objectives; establishment of a baseline plan for accomplishment of program
 objectives; and use of EV techniques for performance measurement during the execution of a
 program.

http://www.ndia.org/Content/ContentGroups/Divisions1/Procurement/PDFs10/NDIA_PMSC_EVM S_IntentGuide_Jan2005.pdf.

8. ROLES AND RESPONSIBILITIES

The following are the roles and responsibilities associated with EVM practices at EPA.

EPA Administrator: Approves continuation of IT investments that are outside of acceptable cost, schedule, and/or performance variance.

Assistant Administrators, Associate Administrators, Staff Office Directors, Regional Administrators, General Counsel, and Inspector General: Ensure, in their areas of responsibility, compliance with this Procedure.

Chief Information Officer (CIO): Works with the Quality and Information Council (QIC) to establish the criteria, threshold levels, and formats for EVM submission. On the advice of the QIC and QIC's IIS, the CIO reviews and selects the investments to be funded, recommends proposals to the Chief Financial Officer (CFO) for investment consideration during the Agency's budget formulation process, and oversees continued implementation of an accurate EVMS to monitor and evaluate the ongoing performance of IT investments. Additionally, the CIO, in consultation with the CFO, Senior Procurement Executive, and the QIC's IIS, reviews and monitors compliance with these Procedures. The CIO reviews the requests for waivers from these Procedures, and approves or disapproves such requests as appropriate.

Chief Financial Officer (CFO): Provides, in consultation with the CIO and other senior program officials, the appropriate review, selects investments to be funded, and monitors compliance with the EVM policy to ensure that the requirements of the OCFO Act of 1990, OMB Circular A-127, and other related statutory and regulatory authorities are met.

Quality and Information Council (QIC): Under the chairmanship of the CIO, addresses and resolves intra-Agency cross-media, cross-program, and interdisciplinary information technology/information management and related policy issues.

QIC Information Investment Subcommittee (IIS): Advises and assists the QIC on all matters pertaining to information investment management. The IIS supports the QIC in making recommendations to the CIO on the appropriateness of information investments, and monitors the Agency's IT investments from inception to completion throughout the Select, Control, and Evaluate phases of the CPIC program.

EPA Classification No.: CIO 2120.P-01.2	CIO Approval Date: 09/28/12				
CIO Transmittal No.: 12-005	Review Date: 09/28/15				

Deputy Chief Information Officer for Technology (DCIOT): Establishes and publishes procedures, standards, and guidelines based on the Clinger-Cohen Act, and OMB and Agency CPIC requirements established herein. The DCIOT reviews requests for waivers from the CPIC procedures and standards, and approves or disapproves them as appropriate for fulfillment of the EPA CPIC policy and Agency mission. (For the waivers from these procedures, please refer to the CIO's Roles and Responsibilities in this section.)

Senior Procurement Executive (SPE): Ensures that acquisition strategy considerations for each project are appropriate, and investment proposals are consistent with the EPA acquisition policies and procedures.

Chief Architect (CA): Provides direction to the development and maintenance of the EPA's Enterprise Architecture, and ensures its coordination with the Federal Enterprise Architecture framework and EPA's information management collaborations with state, local, and tribal partners. Provides recommendations to the IIS/QTS on the selection of the technological enhancements to be developed in the Agency by ensuring that the proposed IT investments are compliant with the EPA's Enterprise Architecture.

Senior Information Officials (SIO): Coordinate the development of information resource investment proposals within their respective offices. They monitor the implementation of information resource investments to ensure that information technologies used and managed by their organization support the organization's business needs and mission and help to achieve EPA's strategic goals. Responsibilities include, but are not limited to determining who is qualified to conduct an IBR and approve an annual request to rebaseline for a change in lifecycle cost under 5% or DME schedule change under 10%.

Information Management Officers (IMO): Support the SIOs in development of the information resource investment proposals within their respective offices, and monitor the implementation of information resource investments.

Senior Resource Officials (SRO): Participate in the development of the information resource investment proposals within their respective offices, and monitor the implementation of information resource investments to ensure effective and appropriate resource management.

Senior Budget Officers (SBO): Support the IMOs, SIOs, and SROs in the process of development of the information resource investment proposals within their respective offices, and monitor the implementation of information resource investments. Ensure the alignment of resources between the Agency's authoritative budget source and the IT investments' business cases.

(Investment) Project Managers (PMs): Develop and maintain viable, appropriate, and achievable CPIC business cases that support EPA's goals for information management and enable the Agency's senior management to select, review, and evaluate IT investments. Additionally, provide day-to-day management of the investments, and ensure that the investments advance in an orderly fashion through the CPIC process. Must be qualified in accordance with Federal and Agency requirements for IT project management, and possess documented knowledge and skills as prescribed by the qualification guidance.

9. **DEFINITIONS**

Actual Cost (AC) – The costs actually incurred and recorded in accomplishing the work performed within a given time period.

Budget at Completion (BAC) - The sum of all budgets established for the contract.

EPA Classification No.: CIO 2120.P-01.2	CIO Approval Date: 09/28/12			
CIO Transmittal No.: 12-005	Review Date: 09/28/15			

Budgeted Cost of Work Scheduled (BCWS) or Planned Value (PV) – The sum of the performance budgets for all work scheduled to be accomplished with a given time period. This includes detailed work packages, planning packages, and LOE packages.

Budgeted Cost of Work Performed (BCWP) or Earned Value (EV) – The value of completed work expressed as the value of the performance budget assigned to that work. This is equal to the sum of the budgets for completed work packages, completed portions of open work packages, apportioned effort earned on the base accounts, and the value of LOE activities.

Capital Investment – The planning, development, acquisition of a capital asset and the management and operation of that asset through its usable life after the initial acquisition. IT Capital investments may consist of one or more assets, the planning, development, and acquisition of which are managed through projects, and which then provide useful components in an operational (production) environment.

Control Account (CA) – A management control point at which budgets (resource plans) and actual costs are accumulated and compared to EV for management control purposes. A control account is a natural management point for planning and control since it represents the work assigned to one responsible organizational element on one program WBS element.

Corrective Action Plan - Major investments with a variance outside of established thresholds for cost or schedule are required to develop Corrective Action Plans. Such plans provide strategies to correct deficiencies and to improve investment performance. The agency EVM Procedures outline the required components of Corrective Action Plans as well as who is responsible for the development and review of Corrective Action Plans.

Definitize – to cause to become definite;¹ commonly used with agreements and contracts, for cost, duration, scope, and/or go no-go decision. **Cost Performance Index (CPI)** – Ratio of work accomplished versus work cost incurred for a specified time period (BCWP divided by ACWP). The CPI is an efficiency rating for work accomplished for resources expended.

Cost Variance (CV) – The difference between earned value and actual cost (cost variance – BCWP – ACWP). A positive value indicates a favorable condition and a negative value indicates an unfavorable condition.

Development/Modernization/Enhancement (DME) – Development, modernization, and enhancement costs associated with new investments or changes to existing systems.

Earned Value (EV) (or Budgeted Cost of Work Performed) - The value of completed work expressed as the value of the performance budget assigned to that work. This is equal to the sum of the budgets for completed work packages, completed portions of open work packages, apportioned effort earned on the base accounts, and the value of LOE activities.

Earned Value Management (EVM) – A project (investment) management tool that effectively integrates the investment scope of work with schedule and cost elements for optimum investment planning and control. The qualities and operating characteristics of EVMS are described in American National Standards Institute (ANSI)/Electronic Industries Alliance (EIA) Standard –748–1998, Earned Value Management Systems, approved May 19, 1998. It was reaffirmed on August 28, 2002.

Earned Value Management System (EVMS) – An integrated management system which uses EV to measure progress objectively.

Estimate at Completion (EAC) – Actual direct costs, plus indirect costs allocable to the project, plus the estimate of costs (direct and indirect) for authorized work remaining.

¹ Dictionary.com

EPA Classification No.: CIO 2120.P-01.2	CIO Approval Date: 09/28/12				
CIO Transmittal No.: 12-005	Review Date: 09/28/15				

Integrated Baseline Review (IBR) – A joint Government/Contractor assessment of the ability of the project's technical plan to achieve the objectives of the scope of work; adequacy of the time allocated for performing the defined tasks to successfully achieve the project schedule objectives; ability of the project or investment manager to successfully execute the project and attain cost objectives, recognizing the relationship between budget resources, funding, schedule, and scope of work; availability of personnel, facilities, and equipment when required, to perform the defined tasks needed to execute the program successfully; and the degree to which the management process provides effective and integrated technical/schedule/cost planning and baseline control. IBRs are intended to provide a mutual understanding of risks inherent in offerors'/contractors' performance plans and underlying management control systems and to formulate a plan to handle these risks.

Level of Effort (LOE) – Work that does not lend itself to subdivision into discrete schedule increments of work.

Life Cycle Costs – The overall estimated cost, both Government and contractor, for a particular program alternative over the time period corresponding to the life of the program, including direct and indirect initial costs plus any periodic or continuing costs of operation and maintenance.

Major IT Investment – a program requiring special management attention because of its importance to the mission or function of the agency, a component of the agency, or another organization; has significant program or policy implications; has high executive visibility; has high development, operating, or maintenance costs; is funded through other than direct appropriations; or, is defined as major by the agency's capital planning and investment control process. OMB may work with the agency to declare other investments as major investments.

All major IT investments must be reported on the Agency IT Portfolio (Exhibit 53) and must submit a (Capital Asset Plan and Business Case Summary (Exhibit 300).

Mixed Life-Cycle Investment – An investment that has both DME and steady state aspects. For example, a mixed lifecycle investment could include a prototype or module of a system that is operational, with the remainder of the system in DME stages; or, a service contract for steady state on the current system with a DME requirement for system upgrade or replacement.

Non-Major IT Investment –OMB's definition of a non-major investment which is any initiative or investment not meeting the definition of major, but that is part of the agency's IT investments. All non-major investments (for EPA >=\$250K and less than \$5 million annually) must be reported individually on Exhibit 53.

Note: EPA identifies two categories within Non-majors for internal reporting and investment management purposes. Medium categories are defined as less than \$5 million and greater or equal to \$250 thousand. Lites are any IT investments less than \$250 thousand.

Operational (Steady State) – An asset or part of an asset that has been delivered and is performing the mission.

Organizational Breakdown Structures (OBS) – A functionally-oriented division of the contractor's and agency organization established to perform the work on a specific contract. The OBS indicates the organizational relationships and is used as the framework for assigning work responsibilities.

Performance Measurement Baseline (PMB) – The time-phased budget plan against which contract performance is measured. It is formed by the distributed budgets. It is equal to the total allocated budget less management reserve.

Performance-Based Acquisition Management – A documented, systematic process for program management, which includes integration of program scope, schedule and cost objectives, establishment of a baseline plan for accomplishment of program objectives, and use of EV techniques for performance

EPA Classification No.: CIO 2120.P-01.2	CIO Approval Date: 09/28/12				
CIO Transmittal No.: 12-005	Review Date: 09/28/15				

measurement during execution of the program. EVMS is required for those parts of the investment where developmental effort is required. This includes prototypes and tests to select the most cost effective alternative during the Planning Phase; the work during the Acquisition Phase; and any developmental, modification, or upgrade work done during the Operational/Steady State Phase. EVMS is to be applied to both Government and contractor efforts. For operational/steady state systems, an operational analysis system as discussed in Phase IV of the Capital Programming Guide is required. A performance-based service contract/agreement with a defined Quality Assurance Plan should be the basis for monitoring contractor or in-house performance of this phase.

Planned Value (PV) or Budgeted Cost of Work Scheduled (BCWS) – The sum of the performance budgets for all work scheduled to be accomplished within a given time period. This includes detailed work packages, planning packages, and LOE packages.

Planning – Preparing, developing, or acquiring the information you will use to design the investment; assess the benefits, risks, and risk-adjusted life-cycle costs of alternative solutions; and establish realistic cost, schedule, and performance goals, for the selected alternative, before either proceeding to full acquisition of the capital project (investment) or useful segment or terminating the investment. Planning must progress to the point where you are ready to commit to achieving specific goals for the completion of the acquisition before proceeding to the acquisition phase. Information gathering activities may include market research of available solutions, architectural drawings, geological studies, engineering and design studies, and prototypes. Planning is a useful segment of a capital project (investment). Depending on the nature of the investment, one or more planning segments may be necessary.

Planning Package (PP) – A logical aggregation of work within a control account, normally the far-term effort, that can be identified and budgeted in early baseline planning, but is not yet defined into work packages.

Responsibility Assignment Matrix (RAM) – A depiction of the relationship between the WBS elements and the organizations assigned responsibility for ensuring their accomplishment.

Schedule Variance (SV) – The difference between earned value and the budget (schedule variance = BCWP – BCWS). A positive value is a favorable condition while a negative value is unfavorable.

Schedule Performance Index (SPI) – SPI is the dollar value of work accomplished for each dollar of work planned (BCWP divided by BCWS).

Single Point Adjustment (SPA) – An SPA is made when an investment's existing cost and/or schedule variances are set to zero and all the remaining work is re-planned with the goal of completing the investment on schedule and on budget. The SPA obscures past performance, collapses the EAC range, and makes the resulting EAC unreliable.

Undistributed Budget (UB) – Budget applicable to contract effort that has not yet been identified to the WBS elements at or below the lowest level of reporting to the Government.

Variance at Completion (VAC) – The difference between the total budget assigned to an investment, WBS element, organizational entity, or cost account and the estimate at completion. Variance at Completion = Budget at Completion - Estimate at Completion. It represents the amount of expected overrun or underrun.

Work Breakdown Structure (WBS) – A product-oriented family tree division of hardware, software, services, and other work tasks that organizes, displays, and defines the product to be developed and/or produced and relates the elements of the work to be accomplished to each other and the end product(s).

Work Package (WP) – A detailed task or set of tasks performed within a control account. It represents units of work at levels where work is performed. It is clearly distinguished from all other work packages; is assigned to a single organizational element; has scheduled start and completion dates; allows for the

EPA Classification No.: CIO 2120.P-01.2	CIO Approval Date: 09/28/12				
CIO Transmittal No.: 12-005	Review Date: 09/28/15				

objective measurement of discrete work; has a budget or assigned value (dollars); and the duration is limited to a relatively short span of time.

10. WAIVERS

No waivers allowed.

11. RELATED PROCEDURES, STANDARDS AND GUIDANCE

None.

12. MATERIAL SUPERSEDED

EVM Procedures dated April 18, 2008.

13. ADDITIONAL INFORMATION

See Appendices A-D attached.

Malcolm D. Jackson
Assistant Administrator and Chief Information Officer
Office of Environmental Information

APPENDIX A OMB Quarterly EVM Reporting Template

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APPENDIX B

ANSI/EIA STANDARD 748 – Summarized (32) Guidelines

Organization

- 1. Define the authorized work elements for the program. A WBS, tailored for effective internal management control, is commonly used in this process.
- 2. Identify the program organizational structure including the major subcontractors responsible for accomplishing the authorized work, and define the organizational elements in which work will be planned and controlled.
- 3. Provide for the integration of the company's planning, scheduling, budgeting, work authorization, and cost accumulation processes with each other, and as appropriate, the program WBS and the program organizational structure.
- 4. Identify the company organization or function responsible for controlling overhead (indirect costs).
- Provide for integration of the program WBS and the program organizational structure in a manner that permits cost and schedule performance measurement by elements of either or both structures as needed.

Planning, Scheduling and Budgeting

- 6. Schedule the authorized work in a manner which describes the sequence of work and identifies significant task interdependencies required to meet the requirements of the program.
- 7. Identify physical products, milestones, technical performance goals, or other indicators that will be used to measure progress.
- 8. Establish and maintain a time-phased budget baseline, at the control account level, against which program performance can be measured. Initial budgets established for performance measurement will be based on either internal management goals or the external customer negotiated target cost including estimates for authorized but undefinitized work. Budget for far-term efforts may be held in higher level accounts until an appropriate time for allocation at the control account level. On government contracts, if an over target baseline is used for performance measurement reporting purposes prior notification must be provided to the customer.
- 9. Establish budgets for authorized work with identification of significant cost elements (labor, material, etc.) as needed for internal management and for control of subcontractors.
- 10. To the extent it is practicable to identify the authorized work in discrete work packages, establish budgets for this work in terms of dollars, hours, or other measurable units. Where the entire control account is not subdivided into work packages, identify the far term effort in larger planning packages for budget and scheduling purposes.
- 11. Provide that the sum of all work package budgets plus planning package budgets within a control account equals the control account budget.
- 12. Identify and control level of effort activity by time-phased budgets established for this purpose. Only that effort which is unmeasurable or for which measurement is impractical may be classified as level of effort.
- 13. Establish overhead budgets for each significant organizational component of the company for expenses which will become indirect costs. Reflect in the program budgets, at the appropriate level, the amounts in overhead pools that are planned to be allocated to the program as indirect costs.
- 14. Identify management reserves and undistributed budget.
- 15. Provide that the program target cost goal is reconciled with the sum of all internal program budgets and management reserves.

Accounting Considerations

- 16. Record direct costs in a manner consistent with the budgets in a formal system controlled by the general books of account.
- 17. When a WBS is used, summarize direct costs from control accounts into the WBS without allocation of a single control account to two or more WBS elements.
- 18. Summarize direct costs from the control accounts into the contractor's organizational elements without allocation of a single control account to two or more organizational elements.

- 19. Record all indirect costs which will be allocated to the contract.
- 20. Identify unit costs, equivalent unit's costs, or lot costs when needed.
- 21. For EVMS, the material accounting system will provide for:
 - Accurate cost accumulation and assignment of costs to control accounts in a manner consistent with the budgets using recognized, acceptable, costing techniques.
 - Cost performance measurement at the point in time most suitable for the category of material involved, but no earlier than the time of progress payments or actual receipt of material.
 - Full accountability of all material purchased for the program including the residual inventory.

Analysis and Management Reports

- 22. At least on a monthly basis, generate the following information at the control account and other levels as necessary for management control using actual cost data from, or reconcilable with, the accounting system:
 - Comparison of the amount of planned budget and the amount of budget earned for work accomplished. This comparison provides the schedule variance.
 - Comparison of the amount of the budget earned and the actual (applied where appropriate) direct costs for the same work. This comparison provides the cost variance.
- 23. Identify, at least monthly, the significant differences between both planned and actual schedule performance and planned and actual cost performance, and provide the reasons for the variances in the detail needed by program management.
- 24. Identify budgeted and applied (or actual) indirect costs at the level and frequency needed by management for effective control, along with the reasons for any significant variances.
- 25. Summarize the data elements and associated variances through the program organization and/or WBS to support management needs and any customer reporting specified in the contract.
- 26. Implement managerial actions taken as the result of earned value information.
- 27. Develop revised estimates of cost at completion based on performance to date, commitment values for material, and estimates of future conditions. Compare this information with the performance measurement baseline to identify variances at completion important to company management and any applicable customer reporting requirements including statements of funding requirements.

Revisions and Data Maintenance

- 28. Incorporate authorized changes in a timely manner, recording the effects of such changes in budgets and schedules. In the directed effort prior to negotiation of a change, base such revisions on the amount estimated and budgeted to the program organizations.
- 29. Reconcile current budgets to prior budgets in terms of changes to the authorized work and internal replanning in the detail needed by management for effective control.
- 30. Control retroactive changes to records pertaining to work performed that would change previously reported amounts for actual costs, earned value, or budgets. Adjustments should be made only for correction of errors, routine accounting adjustments, effects of customer or management directed changes, or to improve the baseline integrity and accuracy of performance measurement data.
- 31. Prevent revisions to the program budget except for authorized changes.
- 32. Document changes to the performance measurement baseline.

APPENDIX C Acronyms

Acronym	Definition					
AC	Actual Cost					
ANSI/EIA	American National Standards Institute/Electronic Industries Association					
BAC	Budget at Completion					
BCWS	Budgeted Cost of Work Scheduled					
BCWP	Budgeted Cost of Work Performed					
CA	(1) Chief Architect (2) Control Account					
CCA	Clinger-Cohen Act					
CFO	Chief Financial Officer					
CIO	Chief Information Officer					
СЫ	Cost Performance Index					
CPIC	Capital Planning and Investment Control					
CV	Cost Variance					
DCIOT	Deputy Chief Information Officer for Technology					
DME	Development/Modernization/Enhancement					
DOD	Department of Defense					
EA	Enterprise Architecture					
EAC	Estimate at Completion					
EPA	Environmental Protection Agency					
EPAAR	EPA Acquisition Regulation					
ETC	Estimate to Complete					
EV	Earned Value					
EVM	Earned Value Management					
EVMS	Earned Value Management System					
FAR	Federal Acquisition Regulation					
FTE	Full Time Equivalent					
IBR	Integrated Baseline Reviews					
IIS	Information Investment Subcommittee					
IMO	Information Management Officer					
IPT	Integrated Project/Program Team					
IT	Information Technology					
LoB	Lines of Business					
NDIA	National Defense Industrial Association					
O&M	Operations and Maintenance					
OAM	Office of Acquisition Management					
OBS	Organizational Breakdown Structures					

OEI	Office of Environmental Information
OMB	Office of Management and Budget
PF	Performance Factor
PM	(Investment) Project Manager
PMB	Performance Measurement Baseline
PMSC	Program Management Systems Committee
PP	Planning Package
PV	Planned Value
QIC	Quality and Information Council
RAM	Responsibility Assignment Matrix
SBO	Senior Budget Officer
SIO	Senior Information Official
SLC	System Life Cycle
SME	Subject Matter Expert
SPA	Single Point Adjustment
SPE	Senior Procurement Executive
SPI	Schedule Performance Index
SRO	Senior Resource Official
SV	Schedule Variance
UB	Undistributed Budget
VAC	Variance at Completion
WBS	Work Breakdown Structure
WP	Work Package

APPENDIX D Contractor EVM Compliance Certification Letter

Month Day, Year
EPA Contracting Officer Name, Title Mailing Address
City, State Zip Code
Dear (EPA Contracting Officer):
(First Name Last Name) representing
(Contractor Company) certify that the EVM reporting for (Contract Number) is
I, (First Name Last Name) representing (Contractor Company) certify that the EVM reporting for (Contract Number) is compliant with Federal Acquisition Regulation (FAR) Clauses 2.101, 7.105, 34, 34.2, and 52.234-2 through
52.234-4, as amended on April 8,2005 (70 FR 17945).
[OR]
I, (First Name Last Name) representing
I, (First Name Last Name) representing (Contractor Company) have initiated a waiver request for (Contract Number)
that will demonstrate that compensating EVM controls are in place for the investment.
Sincerely,
Contractor Representative Signature
Contractor Representative Name